UNTREATED WATER PUBLIC SWIMMING POOLS
NATURAL BATHING BEACHES

Introduction

A natural pool is one that receives or utilizes natural untreated water and may be the local swimming hole or an enhanced natural pool where facilities such as retaining walls, enclosures, amenities and other structures and partial structures have been constructed. In these pools the water is not treated or recirculated.

There are both controlled and uncontrolled natural bathing areas. Some overseeing authority, such as the Corps of Engineers, would monitor a controlled area. In these areas it is likely and certainly prudent to have facilities likes showers, toilets, hand washbasins and trash bins in adequate numbers to accommodate expected bather loads. However, the majority of natural bathing beaches will be uncontrolled, without oversight and typically without any amenities.

It is common sense to use such a resource wisely for its intended purpose and to exclude those activities, which are not compatible with bathing or represent a source of contamination.

Natural water areas are dynamic, ever changing. Streams and rivers continue to deliver downstream what ever they have picked up upstream. Currents affect lakes, ponds and reservoirs and winds pushing water and what ever contaminants it contains from one area to another. A perfectly safe and healthy recreation spot on a river or lake can change in a matter of minutes to hours into one that presents real risks to its users. Many people do not make the connection to unsafe natural waters outside of industrial areas where water contamination concerns are more on people's minds.

These guidelines consider the three recreational categories of primary contact, secondary contact and passive recreation.

- Primary contact considers total body immersion where water could be ingested.
- Secondary contact considers physical contact with the recreational water but where ingestion is unlikely.
- Passive recreation is where very little to no contact is made with the water.

Beach Assessment

To facilitate an assessment of an untreated water public swimming pool, each natural pool should be considered on its own merits. Where a history of consistent or periodic failure is determined when compared to acceptable guidelines, suitable signs should be erected advising bathers that the pool may not comply with the guidelines and that they should exercise discretion when bathing.

The local authority should develop a plan of management to minimize and mitigate the effects of contamination. The plan of management could consider aspects such as:

- The incoming raw water quality,
- Stormwater runoff diversion,
- Recommendations on avoiding whole body contact if you have an illness that decreases your natural immune system.
- Rainfall events have a tendency to wash the surrounding watershed clean of pollutants depositing them in streams and lakes. It takes at least a day or two for these waterways to recover from rain events.
- Check upstream and around the site to ensure there is not a direct pollution source such as livestock in the stream, an industrial facility or a waste discharge to the body of water. Check also for under water entanglement obstructions as well as for unusual currents in rivers, which can also be deceptively dangerous.
- Fishing is typically safe as well as consumption of the fish (if prepared appropriately) with the exception of certain areas and fish species due to heavy metal contamination. See the Fish Consumption Advisory link. (please insert link)
- Canoeing, floating, and wading that don't involve whole body contact or accidental water consumption are typically safe and present a relatively low level of risk.
- Realize that bacteriological testing of these dynamic natural waters is only predictive, not diagnostic. A water test collected in the morning of any given day and analyzed the next day after incubation indicates the previous mornings water quality not necessarily the present water quality.

Bacteriological Standard For Natural Bathing Beaches

The current accepted standard for freshwater natural bathing beaches is a measurement of *E. coli* density in 100ml sample. Bacterial densities should not exceed:

- 126 E. coli per 100 ml (geometric mean of at least 5 samples evenly spaced over a 30 day period.)
- 235 *E. coli* per 100 ml in a single sample

Research published in 1997 demonstrated that water quality at the above levels of contamination would likely cause on average 8 illnesses per 1000 swimmers. Illnesses are similar to those seen in a treated pool where operation and maintenance is less than required. Whole body contact increases the risk of illness.

Sampling

Attempts should be made to sample once a week during the swimming season for at least the first five years to establish trend data. Demonstration of trends at specific sites should be evident at that point and sampling frequency can be modified accordingly.

Sampling should occur at the same approximate site. Sampling at about waist level in the water way is usually most representative. Some research has demonstrated that bacteria can be entrained in the stream/lake substrate and swimming releases these entrained bacteria. You may desire to stir up the bottom after sampling non-agitated waters and then collect another sample to determine if entrained bacteria will dramatically change bacteria counts.

Public Warning

Posting beaches that are regularly utilized by the public is prudent. Attempting to apply specific warnings to specific sites based on actual readings prior to establishing long-term trend data can be frustrating. Samples collected yesterday do not necessarily represent today's water quality. Collecting another water sample the day after incubating a sample that exceeded the limits may demonstrate good water quality when it is analyzed, but that was for yesterday and the water quality may have already changed. Due to this "data lag" concentrating on once weekly sampling is likely just as effective as attempting to get repeat samples from elevated sites and continual changing of the cautionary posting.

It is typically less cumbersome to develop a generic health caution for posting at sites with a number to call for more specific information. As trends become evident for specific sites creating site-specific cautionary postings becomes more realistic.

Data Collection

Logs should be kept, recording at minimum, *E. coli* readings, bather load during sampling, weather conditions for week (especially rain fall) and general water appearance (muddy, algae, clear etc.).